

Water Dowsing



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting

our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.



Water Dowsing

One of the major responsibilities of the U.S. Geological Survey is to assess the quantity and quality of the Nation's surface- and ground-water supplies. The Survey's Water Resources Division, in cooperation with other Federal, State, and local agencies, maintains a nationwide hydrologic data network and carries out water-resource and hydrologic investigations.

Numerous general inquiries concerning water resources and hydrology are directed to the Survey, which has prepared a number of "popular publications" to help answer such requests. As part of that group of publications, this leaflet was prepared to answer some of the most frequently asked questions about the subject of water dowsing and is not intended to make editorial comment on dowsing or its practitioners.



What Is Water Dowsing?

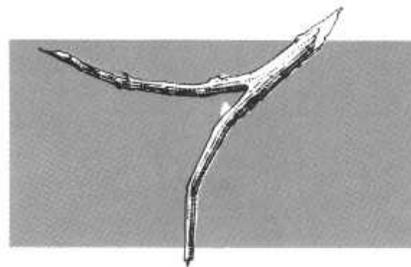
"Water dowsing" refers in general to the practice of using a forked stick, rod, pendulum, or similar device to locate underground water, minerals, or other hidden or lost substances, and has been a subject of discussion and controversy for hundreds, if not thousands, of years.

Although tools and methods vary widely, most dowsers (also called diviners or water witches) probably still use the traditional forked stick, which may come from a variety of trees, including the willow, peach, and witch hazel. Other dowsers may use keys, wire coathangers, pliers, wire rods, pendulums, or various kinds of elaborate boxes and electrical instruments. Some claim powers that enable them to "see" through soil and rock, and some are mediums who go into trances when conditions are favorable.

In the classic method of using a forked stick, one fork is held in each hand with the palms upward. The bottom or butt end of the "Y" is pointed skyward at an angle of about 45°. The dowser then walks back and forth over the area to be tested. When he passes over a source of water, the butt end of the stick is supposed to rotate or be attracted downward.

According to dowsers, the attraction of the water may be so great that the bark peels off as the rod twists in the hands. Some dowsers are said to have suffered blistered or bloody hands from the twisting.

Although most dowsing for water is done at the actual site where water is needed, some dowsers claim to be able to locate water simply by passing the stick over a map.

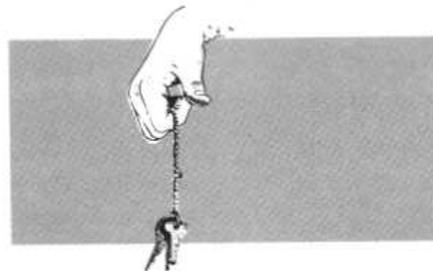
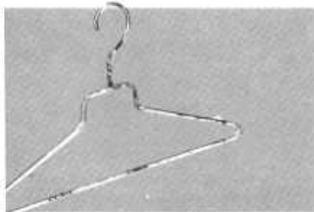


Water dowzers practice mainly in rural or suburban communities where residents are uncertain as to how to locate the best and cheapest supply of ground water. Because the drilling and development of a well often costs more than a thousand dollars, homeowners are understandably reluctant to gamble on a dry hole and turn to the water dowser for advice. The dowser, in turn, undoubtedly believes that he is endowed with a natural ability or has found a workable if unexplainable method of locating underground water.

Water is only one of many substances that different dowzers claim they can find. Divining rods have been used in attempts to locate gold, silver, lead, uranium, oil, coal, and other valuable minerals; to discover buried or hidden treasure; to find lost landmarks and reestablish property boundaries; to detect criminals or hidden soldiers; as well as to analyze personal character, and to trace lost animals. A few dowzers even claim the ability to diagnose and cure disease or to determine the sex of an unborn child.

How Did Water Dowsing Begin?

Cave paintings in northwestern Africa that are 6,000-8,000 years old are believed to show a water dowser at work. Divining rods were also used by the Scythians, Persians, and Medes. Most accounts, however, by Greek and Roman naturalists and scientists do not mention the use of a magic rod, although they do give hints and directions for finding water.



The exact origin of the divining rod in Europe is not known. The first detailed description of it is in Johannes Agricola's "De Re Metallica" (1556), a description of German mines and mining methods. The device was introduced into England during the reign of Elizabeth I (1558-1603) to locate mineral deposits, and soon afterward it was adopted as a water finder throughout Europe.

The practice of water dowsing has always aroused widespread controversy. Its 17th century champions attempted to explain it by the principal of "empathy" or "attraction and repulsion." Its adversaries condemned it as a superstitious and vain practice. Some held that the stick was moved by a satanic influence, and others believed that the dowser received his power from God.

Despite opposition from church and lay leaders, use of the rod spread throughout Europe. Water dowsing seems to be a mainly European cultural phenomenon, completely unknown to New World Indians and Eskimos. It was carried across the Atlantic to America by some of the earliest settlers from England and Germany. Although the published record was very slight at first, water dowsing or witching began to be mentioned after 1675 in connection with witches and witchcraft. Two articles condemning it appeared in the 1821 and 1826 issues of the American Journal

of Science and were among the first in a long line of treatises on water witching.

Despite almost unanimous condemnation by geologists and technicians, the practice of water dowsing has spread throughout America. It has been speculated that thousands of dowsers are active in the United States; many are members of the American Society of Dowsers, Inc.

What Do Dowsers Believe About Ground Water?

Some dowsers seem to believe that water occurs in veins resembling the veins of one's body. According to Henry Gross, one of the best known modern practitioners, underground water flows upward from great depths, forming "domes." He believes such domes to be the source of water for underground veins that flow in various directions. Three domes supposedly on top of Mount Washington, N. H., were said to be coming from a depth of 57,000 feet.

Most dowsers attempt only to locate the positions of the so-called water veins. But many of their clients ask: How deep will I have to drill, and how much water will I get? Some dowsers, therefore, do attempt to estimate the quantity of and the depth to water.

If the well driller does not find water at the indicated spot, the failure may be blamed on interference of hills with the dowsing, a short circuit of "current," incorrect drilling, or the crushing or deflection of the delicate water veins by the driller.

What Does Science Say About Dowsing?

Case histories and demonstrations of dowsers may seem convincing, but when dowsing is exposed to scientific examination, it presents a very different picture. For instance, what does it mean to say that a



Ground-water areas in the conterminous United States capable of yielding 50 gallons per minute or more to

EXPLANATION

Any pattern shows an area underlain by an aquifer generally capable of yielding individual wells 50 gpm (gallons per minute) or more of water containing not more than 2,000 ppm (parts per million) of dissolved solids (includes areas where more highly mineralized water is actually used).



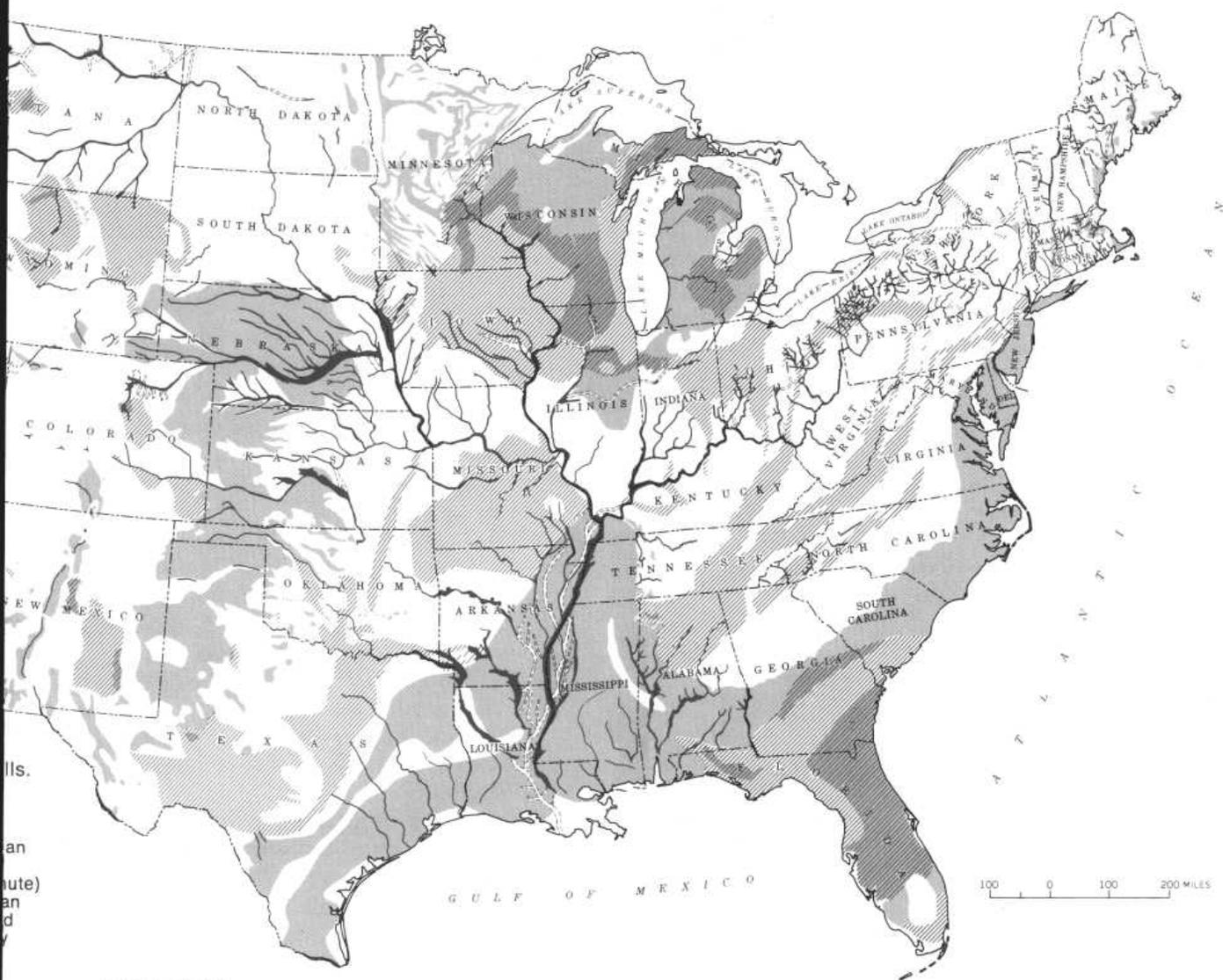
Watercourses in which ground water can be replenished by perennial streams.



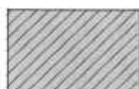
Buried valleys not now occupied by perennial streams.



Unconsolidated and semiconsolidated aquifers (mostly sand and gravel).



Consolidated-rock aquifers (mostly limestone, sandstone, or volcanic rocks).



Both unconsolidated-and consolidated-rock aquifers.

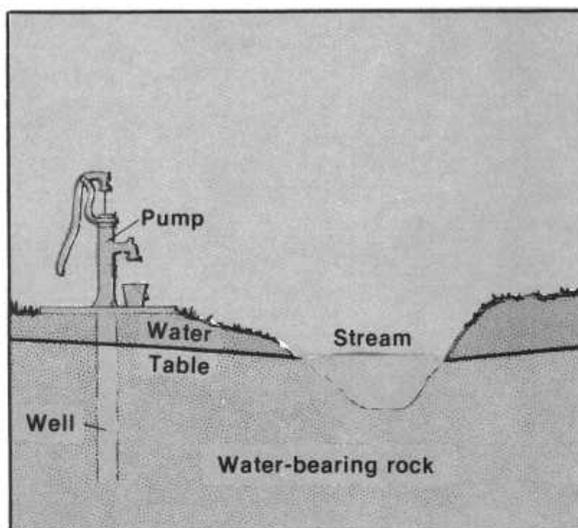


Not known to be underlain by aquifer that will generally yield as much as 50 gpm to wells.

dowser is successful in 8 out of 10 cases? The dowser may find water, but how much? And of what quality? At what rate can it be withdrawn? For how long and with what impact on other wells and on nearby streams?

The natural explanation of "successful" water dowsing is that in many areas water would be hard to miss. The dowser commonly implies that the spot indicated by the rod is the *only* one where water could be found, but this is not necessarily true. In a region of adequate rainfall and favorable geology, it is difficult *not* to drill and find water!

Some water exists under the Earth's surface almost everywhere. This explains why many dowsers appear to be successful. To locate ground water accurately, however, as to depth, quantity, and quality, a number of techniques must be used. Hydrologic, geologic, and geophysical knowledge is needed to determine the depths and extent of the different water-bearing strata and the quantity and quality of water found in each. The area must be thoroughly tested and studied to determine these facts. The U.S. Geological Survey, the Federal agency with major responsibility for assessing the quantity and quality of the Nation's surface and ground waters, believes that no single



technique suffices to locate favorable water-well sites.

Numerous books and pamphlets have been written on the subject of water dowsing. Some of these publications report on scientifically controlled experiments and investigations. From these findings, the U.S. Geological Survey has concluded that the expense of further tests of water dowsing is not justified.

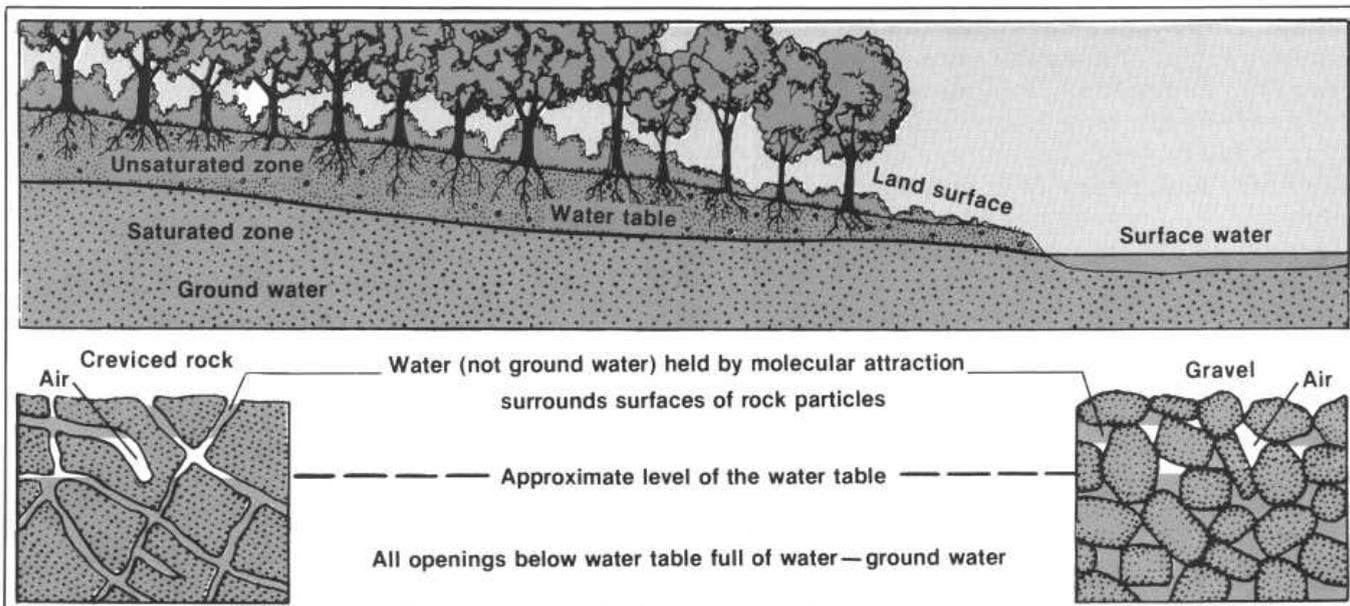
How Does Ground Water Occur?

Contrary to the belief of dowsers, ground water does not commonly flow in veins, domes, or underground rivers. Ground water is the water which fills pores or cracks in underground rocks. It is replenished by nature according to the local climate and geology and is variable in both amount and quality.

When rain falls, the plants and soil take up water. Some of the excess water runs off to streams, and some percolates down into the pores or cracks in the subsurface rocks. A well that extends into the saturated zone will fill with water to the level of the water table—the top of the zone in which all the openings of the rocks are filled with water.

It is important to know whether water will flow into the well fast enough to make it useful for man's purposes. A "tight" rock such as clay or solid granite, with tiny pores or only a few narrow cracks, may give up water so slowly that it is not useful. If the openings in the rock are large enough to let water flow freely, however, water in useful amounts can be taken out.

Several water-bearing rock layers may lie beneath the surface, separated by layers of rock less capable of carrying water. This geologic configuration may give rise to *artesian* conditions, where water levels in wells that penetrate the deeper layers of water-carrying rock rise under pressure and in some instances rise so high as to create flowing wells.



How ground water occurs in rocks.

How Do Hydrologists Locate Ground Water?

Compared to the dowser's dramatic display, the hydrologist's procedure for locating ground water may seem dull. His patient pursuit of the unseen is interesting, nonetheless.

The landscape offers helpful clues. Shallow ground water is more likely to occur in larger quantities under valleys than under hills, because ground water obeys the law of gravity and flows downward just as surface water does. In arid regions the presence of "water-loving" plants is an indication of ground water at shallow depth. Any area where water shows up at the surface, in springs, seeps, swamps, or lakes, must have some ground water, though not necessarily in large quantity or of usable quality.

Rocks are the most valuable clues of all. Hydrologists use the word "rock" for hard, consolidated formations such as sandstone, limestone, or granite as well as for loose, unconsolidated sediments such as gravel or

sand. An "aquifer" is any body of rock that contains a usable supply of water. A good aquifer must be both porous enough to hold water and permeable enough to allow the continuous recharge of water to a well. Gravel, sand, sandstone, and limestone are among the best aquifers, but they form only a fraction of the rocks in the Earth's crust. Most rocks are fine grained or otherwise "tight" and store or carry little water.

As a first step in locating ground water, the hydrologist prepares a geologic map showing where the different kinds of rock come to the land surface. Some of the rocks may be so cracked and broken that they provide good openings to carry water underground. The rocks may be so folded and displaced, however, that it is difficult to trace their location underground.

Next, he gathers information on the wells in the area—their locations, the depth to water, the amount of water pumped, and the kinds of rock they penetrate. Because he cannot always afford to drill a test hole to obtain information, records of wells already drilled are his mainstay.

If there are no wells in the area, or not enough information is available on existing ones, the hydrologist may contract with a well driller to put down some test holes. At these holes he will make pumping or aquifer tests. These tests indicate the water-bearing properties of the aquifer tapped by the well. From the tests the hydrologist can determine the amount of water moving through the aquifer, the volume of water that can enter the well, and the effect of pumping on the water level of other wells in the area.

For man's use of water, quality is just as important as quantity. The hydrologist will take samples of water from different wells and have them chemically analyzed.

The hydrologist's report and geologic map will show where water can be found, its chemical composition, and in a general way, how much is available. This is the scientific approach used by the U.S. Geological Survey, State resource agencies, and consulting engineers in making their ground-water studies. Information about local ground-water conditions may be found in the offices that the U.S. Geological Survey's Water Resources Division maintains in all 50 States.

Where Can I Find Out More About Water Dowsing and Ground Water?

The only comprehensive report on water dowsing published by the U.S. Geological Survey is *The Divining Rod, A History of Water Witching*, by A. J. Ellis, published as USGS Water-Supply Paper 416 in 1917 and reprinted in 1957. This report contains detailed information and includes references to several hundred papers on the use of the divining rod and related subjects.

U.S. Geological Survey Water-Supply Paper 1800 *The Role of Ground Water in the National Water Situation*, by C. L. McGuinness, 1963, summarizes the

occurrence and development of ground water in the conterminous United States.

These reports are now out of print, but can be consulted at certain Geological Survey libraries and offices.

For a simple and easily understood discussion of basic facts, principles, and problems of water, consult *A Primer on Water*, by L. B. Leopold and W. B. Langbein, 1960, and *A Primer on Ground Water*, by H. L. Baldwin and C. L. McGuinness, 1963. These primers are sold by the Alexandria Branch of Distribution listed below.

This publication is one of a series of general interest publications prepared by the U.S. Geological Survey to provide information about the earth sciences, natural resources, and the environment. To obtain a catalog of additional titles in the series "General Interest Publications of the U.S. Geological Survey," write:

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